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► To cite this version:

Nicolas Berland, Jean-Pierre Ponssard, Olivier Saulpic. Recurrent Attempts to Renovate Management ControlRevisited through a Simons' Perspective. 2006. hal-00243033

HAL Id: hal-00243033

<https://hal.science/hal-00243033>

Preprint submitted on 6 Feb 2008

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ÉCOLE POLYTECHNIQUE

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE



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Résumé: On propose de caractériser un système de pilotage et de contrôle à partir de trois dimensions: l'implication des managers, la spécificité des outils, la relation avec le système d'incitation. Cette caractérisation constitue une extension directe de la typologie introduite par Simons (1995) pour distinguer entre contrôle interactif et contrôle diagnostic. Les tentatives récurrentes pour rénover le contrôle de gestion suite aux critiques sévères formulées par Kaplan et Johnson (1987) sont alors re-examinées. Les approches du type contrôle stratégique ou le management par la valeur apparaissent respectivement comme représentatives soit du contrôle interactif soit du contrôle diagnostic. Le cadre proposé permet de bien rendre compte des forces et faiblesses de ce type d'approches toujours très en vogue auprès des entreprises.

Abstract: Three dimensions characterize a management control system: the nature of the involvement of operational managers, the degree of customization of the underlying tools and the relationship with the compensation policy. This characterization further formalizes the distinction between diagnostic and interactive control systems introduced by Simons (1995). It provides an interesting framework to discuss the recurrent attempts to renovate management control that followed the severe criticism of Johnson and Kaplan (1987). In this framework, information systems based on a strategic vision of the activity are representative of interactive control while value based management systems such as EVA are representative of diagnostic control. The strengths and weaknesses of each approach are discussed using the proposed taxonomy as a theoretical grid.

Mots clés : Pilotage, Incitations, Coordination, Contrôle interactif vs contrôle diagnostic

Key Words : Management devices, Incentives, Coordination, Interactive control, Diagnostic control

Classification JEL: M400

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1. INTRODUCTION

Research conducted by Simons (1995) on the use of management control systems in situations of strategic change, prompted him to define a new approach to these systems, which is based on the distinction between interactive control systems and diagnostic control systems. This approach has spawned an increasingly rich body of literature, which reflects an interest in the analysis, and design of management control systems (Bisbe & Otley, 2004, Bruining et al., 2004, Davila, 2000, Marginson, 2002, Sponem, 2004). This approach raises the issue of what is traditionally referred to as management control in its accounting form.

Even though Simons' new approach was admittedly innovative and different, it remained cut off from the major debates raging in the field of management control (e.g. the development of activity-based accounting, strategic scorecards [*tableaux de bord*], and value based management).

Broadly speaking, it may be said that these debates were triggered by a major publication by Johnson and Kaplan (1987). In this well-known work, the authors presented a well-documented indictment of management control as it was practiced at that time in many Anglo-Saxon firms. They underlined the gap that existed between these systems and the operational management of the firm. Control systems were essentially based on an accounting vision of reality and broke down in very great detail the various functions and departments of the firm, thereby encouraging an incremental and local approach to the drafting of budgets. Operational staff that used these systems was sometimes constrained to make absolutely foolish decisions. The real objective of the company, according to the authors, required a radically different approach based on a high degree of responsiveness from the entire firm, as well as greater coordination between functions and departments. This had become necessary as firms increasingly faced a highly uncertain technical and/or commercial environment.

This assessment was widely accepted by management personnel in the corporate world, and resulted in a major burst of contributions, especially from consultants. Otley (2001) has classified these contributions into two main categories:

- Firstly, a school of thought built around an increasingly strategic vision of information systems. A significant body of research based on case analysis or experimentation existed in French companies at that time. It focused on the management of projects (Midler, 1990), activity based costing as a step for activity based management (Lorino 1991, Lebas, 1991, Mévellec, 1990), production management (Hatchuel and Sardas, 1990), as well as on the design of interactive budgets (Tanguy 1992). Similar trends of research occurred in Anglo-saxon firms. In

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the United States, this work received its initial impetus from Kaplan and was later developed in several directions such as to the present day Balanced Scorecard, or BSC, designed by the consultant David Norton (Kaplan et Norton, 1996).

- Secondly, another movement built around value based management. It was initiated later and focused on acquiring a greater understanding of incentives in control systems. This work was especially prompted by Stern, encouraged by leading researchers such as Jensen (2001), and operationnally developed by many management consulting firms, Stern&Stewart being of the better known for its EVA systems (Stewart, 1991, Stern, Stewart and Chew, 1996).

The objective of this article is to make more explicit the connection between the theoretical framework developed by Simons and those more applied but important contributions.

To better establish this connection it is proposed to extend Simons' taxonomy to explicitly include the two dimensions that played a key role in those applied contributions namely: the nature of the control tools and the relationship of the control system with the compensation policy.

Interactive systems would then be characterized not only by the continuous involvement of operational staff, but also by the use of more customized tools making explicit the interaction between the various departments while entertaining a loose connection with the compensation policy. Diagnostic systems would feature not only arms' length relationship along the hierarchical line, but also the reliance on more generic control tools that are explicitly linked to performance indicators used in the compensation policy. In interactive control emphasis would be on improved internal coordination through relevant decision support systems while in diagnostic control emphasis would be on alignment with shareholders through more relevant internal financial indicators.

It will be argued that this enlarged theoretical framework facilitates the discussion of the strengths and weaknesses of recurrent attempts to renovate management control.

In section 1 a brief reminder of Simons' theoretical framework is provided. Section 2 extends Simons' approach by introducing two new dimensions: the degree of customization of the control tools, the degree of objectivity of the relationship with the compensation policy. In section 3 the attempts to redefine management control systems are re-examined from a theoretical point. This theoretical re-assessment is then used to suggest future avenues of research.

2. AN EXTENSION OF SIMONS' TAXONOMY OF CONTROL SYSTEMS

Simons (1995) defines "modern" management control systems as "the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities". This paper will hereafter refers to this concept as "control system". These ideas first appear in Simons (1991) and were further developed in Simons (1999).

2.1 SIMONS'S TAXONOMY

The major contribution made by Simons was to put forward taxonomy of control systems in which the following types of control were distinguished:

Diagnostic control (Simons, 1995, 59). This type of control is performed by using a wide range of indicators, which reflect the different facets of a company's performance, or more generally the information which managers require in order accomplishing their management tasks. The purpose of diagnostic control is to provide a relatively exhaustive measurement of performance. This aspect of control must often be computerized so as to save the manager's time since the quantity of information to be processed is extremely high.

Interactive control (Simons, 1995, 95). This type of control implies a very high degree of interaction by managers with their subordinates in order to deal with the firm's strategic priorities, and requires strong personal involvement in their subordinates' decision making. In a situation of interactive control, the manager's attention is focused on one of the control tools. The data generated by the control tool creates a nearly obsessional determination with the manager and leads them to call into question various aspects of the company that they are managing. The quantity of data in question should not be too high so as to enable each manager to absorb this information, in addition to executing the many tasks required by his position.

Control tools as such are neutral. Some control tools are used by managers to personally involve themselves in the management of their activity, and to interact with their subordinates. Other more numerous control tools are used for diagnostic control at arm's length and/or based on a management by exception principle.

The interactive control method will focus on areas which will vary from company to company according to the critical performance criteria.

In his research Simons drew up a list of factors to associate some control tools with the relevant type of uncertainty to be controlled.

For example:

When competition is technology-based, companies must be prepared to protect their technological skills (e.g. patent protection, upgrading of technical skills). When competition is based solely on the perceived satisfaction of the customer, companies should strive to develop their marketing skills. When a firm competes on regulated markets, it should ensure that it has a sufficient number of outside contacts in order to effectively manage networks of influence.

When value chains are complex and require the involvement of several decision-makers, detailed industrial planning systems are considered to be the most appropriate. In the case of non-complex value chains, managers need only have recourse to input/output measurements.

Competition based primarily on time and quick reactions requires that managers closely monitor sales trends, otherwise they will use general financial planning systems.

Simons' approach operates a clear distinction between (i) control tools, (ii) the role and function of controllers, and (iii) the management control process. Interactive and diagnostic systems have clear differences on the last two items but no difference at all on the first item.

2.2 EXTENSION OF SIMONS' THEORETICAL FRAMEWORK

Simons' approach is extended in two directions.

Firstly, the fact that strategic vision be used to select the area for interactive control does have an impact on the tools as such. This is particularly the case because the emphasis is on prompting a better coordination within the firm. In this line of thought vertical (hierarchical) interactivity (the one emphasized by Simons) goes along with horizontal (cross functional) interactivity, and horizontal interactivity often requires the design of specific control tools, as will be apparent in the applied work. For example, consider a production entity and a commercial entity; it is possible to characterize what would be their relationships in a “diagnostic” and in an “interactive” control framework. In the first case, the relationship is based on generic performance indicators (quantities, costs and margins; standards for these indicators are defined in the budget and the variances between actual and standards are listed and analysed). In the second case, the relationship is based on a specific representation of the material flows of the firm’s activity (which may include suppliers and clients, capacity constraints...), thereby generating more customized performance indicators.

Secondly, the relationship between the control system and the compensation policy is introduced. It is argued that it makes a difference whether the emphasis is on internal coordination or on a better alignment with financial objectives. In the first case, the relationship may be based on subjective assessments while in the second case it may rely on more quantified and objective indicators. This relationship interacts with the way the control system is used. As a matter of fact, contrarily to the first dimension, Simons () does introduce this connection. In this respect, the proposed extension merely explicits his ideas.

These two dimensions refer to a set of questions that can be summarized as follows:

How are the control tools constructed? What is the degree of customization of the control tools? Are they rather:

generic? Can they be easily transposed from one business activity to another? Can it be decomposed to independent subsets of control tools within the organization?

customized? Are they based on a strategic vision specific to a particular activity? Is it important that the operational managers share this vision thus inducing horizontal interdependence?

What is the relationship of the control system with the compensation policy? Is the reward system based on the indicators defined in the control system:

objectively? Using a formal quantitative calibrated scheme?

subjectively? Only loosely through qualitative and subjective judgments of the superior?

Table1 provides a detailed set of questions to identify further the nature of a given control system. Two distinctive sets of answers are given to define the two idealized diagnostic and interactive control systems that are proposed to extend Simons’ taxonomy.

(insert Table 1 about here)

3. RE-EXAMINATION OF TWO ATTEMPTS TO REFORM MANAGEMENT CONTROL

It will now be demonstrated that this extended framework allows for an original and productive re-examination of certain approaches, which at various times in the past, have

attempted to redefine management control in order to better meet the needs of strategic changes. In this respect, the extended framework provides a better understanding of the strengths and weaknesses of these various approaches.

This re-examination is carried on using Otley (2001) classification of the past contributions into two main categories:

- strategic vision of information systems;
- value based management.

Our theoretical framework clearly shows the differences between these two schools of thought, as well as their underlying intellectual grounding. Table 2 presents both the traditional control system criticized by Jonson and Kaplan (1987) and the two types of approaches attempting to revive it. For each one of the two main alternative approaches, the theoretical framework serves to identify the nature of the problem, and then to explain the two proposed solutions. Our framework may then be used to provide an analysis of both the strengths and weaknesses of these solutions.

(insert Table 2 about here)

3.1 Identification of the problem

To a certain extent both approaches have succeeded in isolating the problem by identifying a discrepancy between the firm's performance and the indicators used by the control system to measure this very performance. However, in the first case the discrepancy tends to be linked with the information system, whereas in the second case it tends to be related to the assessment system.

In the first case, the main emphasis was placed on the pernicious effects of control system indicators. "The Goal: A Process of Ongoing Improvement" by Goldratt and Cox (1986) was without a doubt one of the most popular publications which exemplified this school of thought. It described in the form of a novel the failure of traditional local control tools to eliminate excessive hold-ups, delays, inventories and costs in the management of a production workshop. The authors underlined the merits of adopting an overall approach based on Japanese management techniques. The main focus of this book is to re-position the strategy at the heart of the firm's management, and to re-build an appropriate control system based on its intended industrial and commercial strategy.

In the second case, the starting point seems to be related to the excessive remuneration of top management in light of the poor share price performance of their firms. According to Jensen and Murphy (1990), remuneration depends more on factors such as a firm's size rather than on its performance on the stock market. Many authors also recount a number of anecdotes about private jets and other unwarranted benefits received by top management. On paper it is true that these remunerations were often linked to accounting performance indicators, which were easily manipulated. This assessment of the situation therefore recommends the establishment of a better alignment between the objectives of a firm (value creation) and performance indicators intended to determine the remuneration of managers.

3.2 Proposed Solutions

The first school of thought thus approaches the re-designing of management control by drawing up a new strategic vision. This process of re-evaluation results in the re-definition of the firm's organization and control systems. In this respect, the automobile industry has been one of the foremost examples of this shift (Clark, Hayes et Wheelwright, 1988). Changes in this industry have included the shortening of the design phase, the implementation of platforms common to several models, and delayed differentiation techniques. In general, these changes have resulted in the establishment of a broad, cross-functional vision suited to the monitoring of projects and activities. As a result, attention shifted away from the representation of a firm based on the simple juxtaposition of profit centers. In terms of the control systems, the actual concept itself of budgetary control has been impacted by this change, and has resulted in the following:

Performance indicators: the introduction of so-called material or operational indicators in systems essentially containing financial or accounting indicators (Chassang, 1987). This is also one of the characteristics of the Balanced Scorecard (Kaplan & Norton, 1996, 2001a)

Performance indicators: introduction of the concept of activity and the processes in the evaluation of costs and performance like in ABC/ABM.

Involvement of operational managers: the establishment of the idea that control systems should be considered more as tools to enhance communication rather than as instruments to control. As a result, management was placed in opposition to reporting, and an overhaul of the role (and profile) of controllers was proposed.

A case study by Tanguy (1989) is particularly interesting in that a link is established between, both financial and non financial, performance indicators and the involvement of operational managers. This study shows how different operational departments were mobilized by the firm's management with the support of management controllers to obtain: firstly consistent material flows, secondly financial outcomes generated by explicitly consistent material flows. This approach may be contrasted with a more traditional procedure usually adopted in that company based on the direct allocation of resources to these departments, the use of transfer prices to define profit centres, the setting of local objectives on the basis of past performance and, finally, a discussion of total budget by piling up and slicing, possibly inconsistent, decentralized budgets. In the case study, which concerned a sector of activity particularly vulnerable to Johnson and Kaplan criticism, this new approach provided opportunities for creating new leeway thanks to its collective nature⁴.

In this situation the issue of the associated incentive scheme usually remains implicit. The underlying assumption seems that individuals derive their motivation from a feeling of mobilization with a team dedicated to accomplishing collective objectives.

Regarding BSC, in coherence with his statement that it is possible to use all the tools both in a diagnostic manner and an interactive one, (Kaplan & Norton, 2001b, 154, Simons, 1995; 68-69) does not classify it as interactive. However, several description of BSC implementation and use are consistent with its classification as an interactive tool in our taxonomy. Firstly, in terms of its use as a basis for compensation, Kaplan and Norton were very cautious in their first book (1996). In their second book (2001b), they describe situations where BSC indicators are used as a basis for incentives but mainly via collective bonuses.

⁴ A quite successful teaching tool known as the "Champagne Game" was created at this time in order to illustrate this change in perspective (de Jaegere and Ponsard, 1990). For a detailed experimental study demonstrating the superiority of horizontal interactive control, see Ponsard and Saulpic (2005).

Moreover, case studies led in France show that the BSC is not deployed throughout the hierarchy, but remains at BU level. It is then used to define cross functional projects to improve the indicators defined in the BSC, those projects are monitored directly by the general management of the BU and no explicit bonus schemes are linked to the BSC⁵. It is thus consistent with our interactive classification and the fact that interactivity requires specificity. Finally, Kaplan and Norton (2001b) mention de deployment of BSC at individual level. But they do not explain how these individual BSC are used in the compensation policy if they are, and they underline that this use of BSC is different from traditional Management by Objective.

Reviving budgetary control through the adoption of value-based management has underlined the particular importance of performance indicators. The initial objective was indeed to re-create “financial” indicators better in line with the maximization of value for the shareholders than the traditional accounting ones. Two main tools were employed to this end. The first tool, developed by the consulting firm Stern&Stewart, builds on a traditional indicator known as “residual income”. It then introduced a host of adjustments to operate the intended alignment. In all Stern&Stewart performed some one hundred adjustments (e.g. by capitalizing R&D expenses or the initial years of operation of a strategic investment), which led to the creation of a new indicator known as EVA. The second tool is primarily focused on defining average cash flows over a specified period of time for budgeted investments, and is known under the name of CFROI. Better business plans (with profitability stages related to clearly defined project portfolios) may be built by using this tool. This tool was developed by the Boston Consulting Group. The specialized business press widely publicized the commercial rivalry between these tools (Myers, 1996). In retrospect, it is clear that the EVA approach went the furthest in reforming control systems because it explicitly took into consideration the assessment system, and as such led to a number of proposals intended to completely review management incentive systems (O’Hanlon and Peasnell, 1998). It should be emphasized that this approach is fairly radical as it proposes to set standards no longer on the basis of budgets or achievements in the past year, but in accordance with the expectations of the financial markets. An entire toolbox was thus created in order to calibrate the presumed link between the market value of the firm and its expected EVA taking into account business cycles (O’Byrne, 1997). As a result, the link between the budget and the establishment of bonuses was completely severed. Jensen (2001) views this break as a very positive point as it enables the budget to re-capture its initial role, i.e. business plan coordination and forecast of financial results.

The aim of this approach is to replicate market incentive mechanisms within organizations. It is based on generic performance indicators, which enables management at arm’s length.

3.3 Limitations of each approach

The rationale behind each one of the two proposed solutions to reform management control has now been clearly established and the distinction between the two alternatives made very clear. This facilitates the discussion of their respective limitations.

⁵ See for instance the case « Compu-Mark » in Mendoza and al. (2005)

Consider the first proposed solution. Any attempt to strategically change management control assumes in fact that once the new strategy has been explained and the new performance indicators defined, the firm's workforce will in principle find itself naturally motivated to seek out all suitable actions to carry out this aim. As a result, ABM (Lorino 1991) or the BSC, which represents the most recent version of this strategic shift, does not address the issue of incentives in sufficient details. The compensation schemes based on collective performance remain unprecise. For example, it does not deal with the difficulty in building an incentive system based on a dashboard, which includes a series of indicators. How each indicator should be calibrated and weighted remains an unaddressed point. Moreover, little attention is paid to the difficulty in implementing team incentives with company personnel while avoiding the phenomenon of free riding.

More generally, such approaches do not address the possible need to re-assess the human resources management policy of the company in accordance with the new recommended coordination methods. Mottis (1999), through a case study about the management of computer projects in banks, shows the importance of this point to explain the relative failure associated with project management. At that time personnel in French banks, as opposed to other sectors such as the car industry, were traditionally managed through tight professional classifications.

Consider now the proposed solution which relies on value based management. It assumes that strategic change will automatically occur and go in the right direction because of the better alignment of incentives. A number of research studies while reporting the intrinsic (while already known long ago) value of EVA as a financial indicator cast some doubts on the validity of this assertion. Firstly, while Stern holds that the EVA system is simpler and more objective than the traditional systems (EVA roundtable, 1994), in a detailed case study, Riceman et al. (2002) highlighted the fact that a significant number of managers did not understand the EVA system. This difficulty in comprehending the system is also mentioned by Wallace (1997) and Mottis and Ponssard (2001-2002). Secondly, Larmande and Ponssard (2005) point out another difficulty with the EVA system, namely the fact that this indicator's degree of controllability is quite low (Antle and Demski, 1988). The authors show in a case study that a great number of managers consider that their bonuses are more directly related to business conditions, rather than to the result of their efforts. Ittner and Larker (1998) studied the changes made to EVA at AT&T. The initial system also seems to have suffered from a lack of controllability as it was modified in order to include a series of items, which were more controllable, such as customer and employee satisfaction. However, AT&T went through a period of value destruction (i.e. a decrease in the share price) as a result of unprofitable strategic investments. In the end this system was simply dropped, as internal bonuses remained high due to the adjustment mechanism, despite the financial difficulties encountered by the firm. When suitable, the implementation of an EVA approach may then be useful in so far as it provides a company-wide tool to easily take into account the cost of capital, rather than using it for the sake of the framework itself.

4. CONCLUSION AND FUTURE AVENUES OF RESEARCH

Our theoretical framework characterizes a management control system based on three dimensions: the nature of the involvement of operational managers, the degree of customization of the control tools and the degree of objectivity of the relationship with the compensation policy. Two theoretical management control systems are identified, building on Simons' classification, i.e. diagnostic and interactive systems. It is suggested that diagnostic

systems are based on arms' length relationships, generic control tools and objective assessment procedures while interactive systems imply continuous managerial involvement, customized control tools and subjective assessment schemes.

Using this taxonomy, proposed solutions to revive traditional control systems may be examined. For instance, the operational approaches such as information systems based on strategic vision appear in line with interactive systems while value based management approaches such as EVA appear in line with diagnostic systems.

This analysis provides a tool to better understand the mechanism of action and the limitations of these two approaches because of the difficulty in designing a system consistent all along the three dimensions of our grid. It shows that each one is based on an underlying assumption that is highly debatable: on the one hand the operational approach assumes that once the strategy has been explained, managers will be naturally inclined to implement it; on the other hand the value based management approach assumes that if incentives are correctly aligned, managers will naturally find the right strategy. The limits of these assertions clearly correspond to difficulties encountered in practice.

The fact that there seem to be empirical limitations associated to each management control system raises the issue of another contribution made by Simons (1994), i.e. the diachronic complementarity observed between diagnostic and interactive systems. The discussion carried out in this paper suggests that this complementarity may in fact be necessary due to the intrinsic limits of each system taken in isolation. A diagnostic system could potentially be lacking in strategy, whereas an interactive system could potentially have a lack of incentives. If this were indeed the case, the limits inherent to each system could be mitigated by a joint diachronic approach, rarely proposed by consulting firms for obvious reasons. Future research work should focus on studying this conjecture, and should include the following areas:

- Pursue the theoretical characterization of interactive and diagnostic systems,
- In particular, study the reciprocal impact of the different system dimensions on each other, i.e. the impact of incentive schemes on the performance indicators and vice versa, or the impact of the nature of the involvement of managers on the degree of the subjectivity of standards,
- Analyze the interactions and complementarities between the diagnostic and interactive systems in field studies to evaluate their possible complementarities empirically.

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Table 1 – Additional Features for Interactive and Diagnostic Control Systems

The Control Systems	How are the control tools constructed?	How do the managers use the system?	What is the relationship with the compensation policy?
Possible set of questions to be addressed	<p>What is the nature of the indicators that are measured (financial, non financial, daily, monthly, yearly...)?</p> <p>How have they been identified (generic business approach or specific business vision)?</p> <p>Do they easily decompose into subsets of indicators or are they closely interdependent?</p> <p>Are they based on a standard information system or do they require customized processes?</p> <p>Is the system audited?</p>	<p>In the organization, who is in charge of the control process, of the information gathering, of validating the data, of upgrading the system (control department, marketing, production...)?</p> <p>Is the control system part of the formal budgeting process or used in other instances?</p> <p>How frequently is it used? With what implications for operational managers?</p>	<p>To what extent are some indicators used as objectives for the compensation policy?</p> <p>Is the alignment of objectives rather internal to reinforce internal coordination or rather external to make managers feel like owners?</p> <p>How are standards set (internally through subjective assessment or through outside benchmarks)?</p>
Diagnostic	<p>Indicators are issued yearly from P&L, and updated monthly (e.g. ROI) possibly enriched through simple aggregate data (quantities sold, price indices...).</p> <p>Based on a rather generic business approach to create value.</p> <p>Intended to be broken down into profit centers and along the organizational chart with little consideration to their possible interdependence.</p> <p>These indicators are obtained from the standard information system.</p> <p>The indicators are audited.</p>	<p>The monitoring of the system is given to controllers.</p> <p>Used as an integral part of the budgeting process.</p> <p>Limited use as a simulation tool.</p> <p>Controllers using partial data from operational managers make monthly updates.</p> <p>Management by exception.</p>	<p>Some indicators are typically used in the compensation policy.</p> <p>Emphasis is on alignment with shareholders with little consideration towards internal coordination.</p> <p>Calibration is explicit using quantitative formula with targets and stretch goals.</p> <p>The calibration may be either internal or external, but reference to an external judgment is always present.</p>
Interactive	<p>Indicators are based on a specific analysis of the performance factors of the business.</p> <p>A model is designed to structure the interdependency of the KPI through the decisions made in the different departments, the time structure is chosen to be relevant to the issues (unfolding of uncertainties, long term impact of decisions...).</p> <p>Data gathering relies on specific as well as on standard data collection procedures.</p> <p>The indicators are not intended to be audited.</p>	<p>The design and the monitoring of the system require a high degree of involvement by operational managers.</p> <p>Frequent usage (both ex ante and ex post) and feedbacks directly performed by operational managers.</p> <p>Controllers would be incapable of producing meaningful forecasts without the involvement of operational managers.</p>	<p>No formal link with the compensation policy.</p> <p>Emphasis is on promoting internal coordination.</p> <p>Indirect incentives are based on managerial discretion of superior (with qualitative judgments assessing the degree of involvement of individuals and/or teams in the actual decision processes).</p>

Table 2 – Historical Background of Control Systems

Applications to the analysis of empirical systems		How are the control tools constructed?	How do the managers use the system?	What is the relationship with the compensation policy?
Budgetary Control (1950-1970)		Accounting indicators with limited information on physical flows. Decomposed through the organization using transfer prices and allocation of common costs to the units.	Ex ante analysis of budgets Monthly follow-up by controller with a variance analysis	Incremental approach based on past year's results and budgetary forecasts
Strategic revival of “interactive” management control (e.g. ABC/activity-based management)	Problem of rear view mirror management			
	Solution	More efficient link between accounting and operational systems Emphasize global achievement rather than local objectives	Control systems used as tool for dialogue Controller's role reformed Used more for management than reporting	No explicit assessment. Workforce encouraged to work towards collective objectives
Revival of “diagnostic” incentive systems (e.g. value based management, EVA)	Problem of gap between bonuses paid and financial results of the firm			
	Solution	More efficient link between accounting systems and external indicators related to value creation	Control system used as main pillar of arm's length management	Total overhaul of incentive system based on external standards